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10/585,332	07/06/2006	Hak-Yong Kim	3254-0140PUS1	2722

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EXAMINER
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SANDERS, JAMES M

ART UNIT	PAPER NUMBER
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1791

NOTIFICATION DATE	DELIVERY MODE
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03/10/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/585,332	<b>Applicant(s)</b> KIM, HAK-YONG	
	<b>Examiner</b> JAMES SANDERS	<b>Art Unit</b> 1791	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 July 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 11-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☒ Claim(s) 1-10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/22/06</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of claims 1-10 in the reply filed on 11/13/09 is acknowledged. Applicant asserts that Examiner has failed to comply with the special rules governing Restriction Requirements in national stage applications filed under 35 U.S.C. § 371, and submits that the product of Group II, the process of Group III, and the apparatus of Group I are related as "a product, a process specially adapted for the manufacture of the said product, and an apparatus or means specifically designed for carrying out the said process," and therefore they qualify for the exemption to restriction as provided by 37 C.F.R. 1.475(b)(5). 37 C.F.R. 1.475(b)(5) specifically states that the different categories of invention will be considered to have unity of invention, and are thus not restrictable in any way, if they are related as a product, a process specially adapted for the manufacture of the said product, and an apparatus or means specifically designed for carrying out the said process. Accordingly, Applicant submits that this national stage application satisfies the requirements of unity of invention, and therefore a restriction between the two groups is improper.

However, Examiner points out that 37 CFR 1.475(a) states that "an international and a national stage application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept ("requirement of unity of invention"). Where a group of inventions is claimed in an application, the requirement of unity of invention shall be fulfilled only when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical

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features. The expression “special technical features” shall mean those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art.” While 37 CFR 1.475(b) includes the statement cited by Applicant above, it is clear from 37 CFR 1.475(a) that the requirement of unity of invention shall be *fulfilled only when* there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features. As such, Examiner points out that the inventions listed as Groups I-III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the common technical feature in all of the groups is bottom-up electrospinning. This element cannot be a special technical feature under PCT Rule 13.2 because the element is shown in the prior art. (KR 2003-0065799, see English translation, already of record) teaches bottom-up electrospinning (Fig. 1, pg 4 paragraph 1) substantially as claimed in claims 1-16. Please see MPEP 1850 for further details.

The requirement is still deemed proper and FINAL.

### ***Specification***

2. The abstract of the disclosure is objected to because Ins 1 and 3 recite the plural form “devices” which appear to be misstatements of the singular form “device”; and In 3 recites “provides an bottom-up” which appears to be a misstatement of “provides a bottom-up”. Correction is required. See MPEP § 608.01(b).

The disclosure is also objected to because of the following informalities: throughout the Specification there are many recitations of the plural form "devices" which appear to be misstatements of the singular form "device" including, for example, at pg 1 ln 22 and pg 2 ln 4; and pg 1 ln 10 recites "necessaries" which appears to be a misstatement of "necessities"; and pg 5 ln 15 recites "pipe4" which appears to be a misstatement of "pipe 4"; and pg 6 ln 10 recites "by arrange a plurality of" which appears to be a misstatement of "by arranging a plurality of"; and pg 10 lns 3-4 recite "The conductive plate 4h with pins arranged in the same manner as the nozzles are is installed" which appears to be a misstatement of "The conductive plate 4h with pins arranged in the same manner as the nozzles is installed"; and pg 14 ln 16 recites "from a voltage generator 6" which appears to be a misstatement of "from a voltage generator 9"; and pg 15 ln 10 recites "nannofiber" which appears to be a misspelling of "nanofiber"; and pg 15 ln 11 recites "is used for various purpose" which appears to be a misstatement of "is used for various purposes"; and pg 15 ln 12 recites "asanitary pad" which appears to be misstatement of "a sanitary pad"; and pg 23 ln 7 recites "he nozzles" which appears to be a misstatement of "the nozzles".

Appropriate correction is required.

### ***Claim Objections***

3. Claims 1-10 are objected to because of the following informalities: these claims recite the plural form "devices" which should be changed to the singular form "device".

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-2 and 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (KR 2003-0065799, see English translation, already of record) in view of either Noakes et al (US 5316800) or Chino et al (US 4729858) further in view of Decker (US 4823550).

For claims 1-2 and 6, Kim et al teach a bottom-up electrospinning device, comprising: a spinning liquid main tank 1; a metering pump 2; a nozzle block 4; nozzles 5 installed on the nozzle block; a collector 7 for collecting fibers being spun from the nozzle block; and a voltage generator 9 for applying a voltage to the nozzle block 4 and the collector 7 (Fig. 1, pg 4 paragraph 1), wherein: [A] the outlets of nozzles 5 installed

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on a nozzle block 4 are formed in an upper direction; and [B] a collector 7 is located on the top part of the nozzle block 4 (Fig. 1, pg 4 paragraph 4); and a spinning liquid dropping device 3 is installed between the spinning liquid main tank 1 and the nozzle block 4 (Fig. 1, pg 4 paragraph 1).

Kim et al do not teach a spinning liquid discharge device 12 is connected to the uppermost part of the nozzle block 4, or a liquid discharge device forcibly feeds an excessively fed spinning liquid to the spinning liquid main tank 1 by a suction air.

However, in a related field of endeavor pertaining to using high voltage to produce spray in the form of liquid ligaments for deposit to a substrate, Noakes et al teach a liquid discharge device located at the uppermost part of the nozzle block that forcibly feeds an excessively fed liquid to the liquid main tank by a suction air (Figs. 2 & 4, col 11 lns 39-49).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Noakes et al with those of Kim et al for benefit of avoiding problems with stopping and resuming supply of liquid to the nozzles as suggested by Noakes et al (col 3 lns 43-44).

Further, though Noakes et al teach a liquid discharge device located at the uppermost part of the nozzle block, they do not explicitly teach the liquid discharge device is connected to the block. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to connect the liquid discharge device to the uppermost part of the nozzle block, since it has been held that making in one piece an article which has formerly been formed in multiple pieces

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involves only routine skill in the art. One would have been motivated to integrate the elements in order to minimize the number of individual parts of the apparatus. Please see MPEP 2144.04 (V) and *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965) for further details.

Also, in a related field of endeavor pertaining to using an extruder head for ejecting liquid onto a web, Chino et al teach providing a line that returns liquid from near the extruder head back to the feed source (Fig. 1, col 3 lns 35-38).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Chino et al with those of Kim et al for benefit of enabling recovery of liquid that is not extruded.

Further, although Chino et al do not explicitly teach the liquid discharge device is connected to the uppermost part of the block, it would have been an obvious matter of design choice to one of ordinary skill in the art at the time the invention was made to connect the liquid discharge device to the uppermost part of the block because Applicant has not disclosed that connecting the liquid discharge device to the uppermost part of the block provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Chino et al's configuration and Applicant's configuration to perform equally well because both would perform the same function of feeding liquid excessively fed to the block back to the main tank. Therefore, it would have been prima facie obvious to modify Chino et al to obtain the invention as specified in claim 1.



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Kim et al/Chino et al does not teach a liquid discharge device forcedly feeds excessively fed spinning liquid to the spinning liquid main tank 1 by a suction air.

However, in a related field of endeavor pertaining to fluid flow control, Decker teaches a liquid discharge device forcedly feeds liquid to the liquid main tank by a suction air (Fig. 19, col 1 lns 6-11).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Decker with those of Kim et al/Chino et al for benefit of enhancing the forced feeding of excess liquid back to the main tank.

For claims 7-9, Kim et al teach the collector 7 is fixed or continuously rotates (Fig.1, pg 7 paragraph 1), the nozzles 5 located on the nozzle block 4 are arranged on a diagonal line or a straight line (Fig. 2), and the outlets of the nozzles 5 are formed in more than one horn having an angle  $\theta$  of 90 to 175° (Figs. 3 & 5, pg 4 paragraph 6).

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (KR 2003-0065799, see English translation) in view of either Noakes et al (US 5316800) or Chino et al (US 4729858) further in view of Decker (US 4823550), and further in view of Weightman (US 3660868).

The previous combinations teach the invention as discussed above.

The previous combinations do not teach the nozzle block 4 is bilaterally reciprocated as a whole.

However, in the same field of endeavor pertaining to manufacture of non-woven fibrous webs, Weightman teaches the nozzle block is bilaterally reciprocated as a whole (Figs. 1 & 2, col 5 lns 47-49).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Weightman with those of either of the previous combinations for benefit of producing a web of uniform weight per unit area as suggested by Weightman (col 1 lns 38-40).

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (KR 2003-0065799, see English translation) in view of either Noakes et al (US 5316800) or Chino et al (US 4729858) further in view of Decker (US 4823550), and further in view of Dubson et al (US 2004/0054406).

Kim et al/Noakes et al and Kim et al/Chino et al/Decker teach the invention as discussed above.

Kim et al/Noakes et al and Kim et al/Chino et al/Decker do not teach a heating device is installed in the collector 7.

However, in the same field of endeavor pertaining to electrospinning synthetic fibers, Dubson et al teaches a heating device is installed in the collector ([0126]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Dubson et al with those of Kim et al/Noakes et al or Kim et al/Chino et al/Decker for benefit of reducing the amount of

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residual solvent and promoting better shape preservation as suggested by Dubson et al ([0126]).

8. Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (KR 2003-0065799, see English translation) in view of either Noakes et al (US 5316800) or Chino et al (US 4729858) further in view of Decker (US 4823550), and further in view of Brauner et al (US 4134954).

Kim et al/Noakes et al and Kim et al/Chino et al/Decker teach the invention as discussed above.

Kim et al also teach the nozzle block 4 comprises: [A] a nozzle plate 4e with nozzles 5 arranged thereon; [B] nozzle circumferential holes 4b surrounding the nozzles 5; [C] a spinning liquid temporary feed plate 4d connected to the nozzle circumferential holes 4b and located right above the nozzle plate 4e; [D] an insulator plate 4c located right above the spinning liquid temporary feed plate 4d; [E] a conductive plate 4h having pins arranged thereon in the same way as the nozzles are and located right below the nozzle plate 4e; [F] a spinning liquid main feed plate 4f including the conductive plate 4h therein; [G] a heating device 4g located right below the spinning liquid main feed plate 4f (Fig. 2, pg 4 paragraph 5).

Kim et al/Noakes et al and Kim et al/Chino et al/Decker do not teach a stirrer 11c is installed in the nozzle block 4 and within the spinning liquid main feed plate 4f.

However, in the same field of endeavor pertaining to spinning, Brauner et al teaches a stirrer is installed in the nozzle block within a liquid main feed plate (Fig. 1, col 2 lns 61-64).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Brauner et al with those of Kim et al/Noakes et al or Kim et al/Chino et al/Decker for benefit of providing a high degree of homogenization as suggested by Brauner et al (col 1 lns 28-30).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES SANDERS whose telephone number is 571-270-7007. The examiner can normally be reached on Monday through Friday, 8 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Del Sole can be reached on 571-272-1130. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JMS

/Joseph S. Del Sole/

Supervisory Patent Examiner, Art Unit 1791